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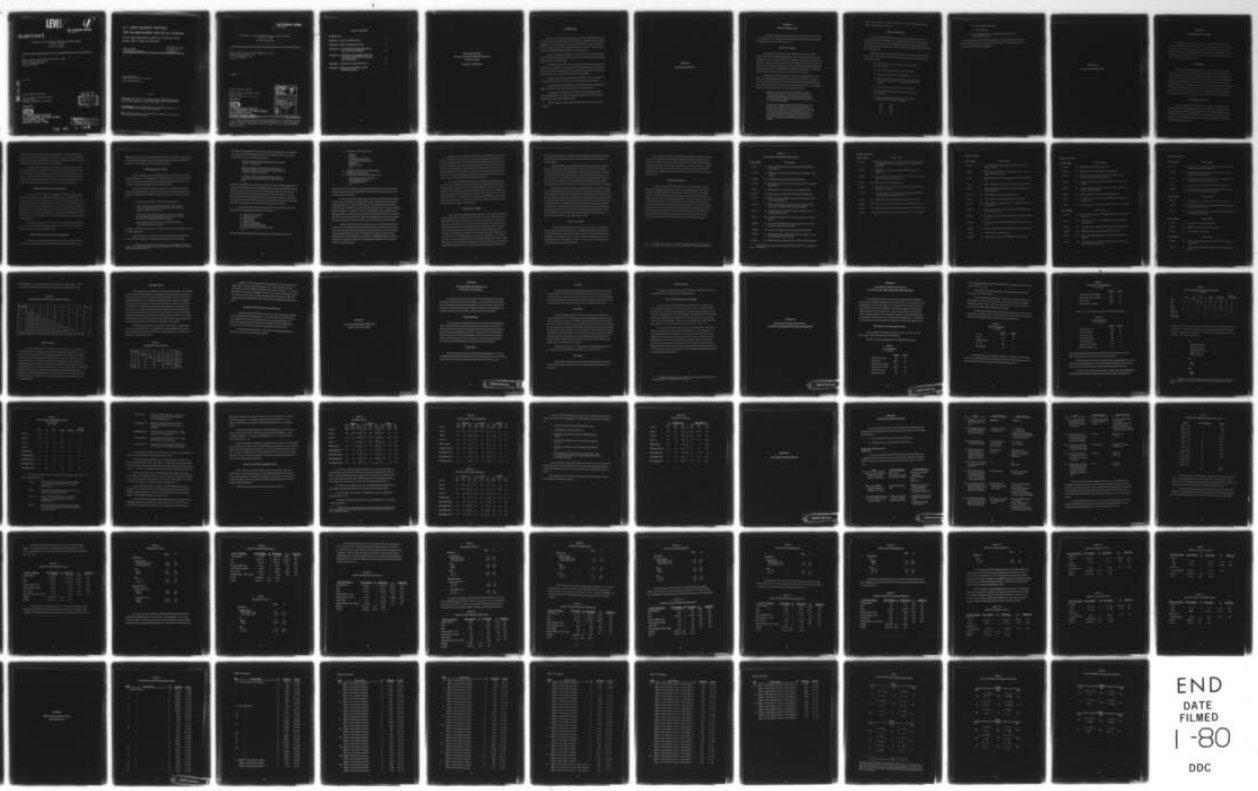

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ARI TECHNICAL REPORT
TR-78-B9A

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AN ANALYSIS OF THE UNIT RACE RELATIONS TRAINING PROGRAM IN THE U.S. ARMY

(Technical Appendix)

A077996

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by

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Human Sciences Research, Inc.
7710 Old Springhouse Road
McLean, VA 22101

July 1978

Contract DAHC 19-76-C-0015

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Presidio of Monterey, California

Prepared for

U.S. ARMY RESEARCH INSTITUTE
for the BEHAVIORAL and SOCIAL SCIENCES
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U. S. ARMY RESEARCH INSTITUTE
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Army Project Number 2Q763744A769 Equal Opportunity

This report on an advanced development research project is designed to meet military management requirements for research bearing on a specific management problem. A limited distribution is made, primarily to the operating agencies directly involved.

TABLE OF CONTENTS

AN ANALYSIS OF THE
UNIT RACE RELATIONS TRAINING PROGRAM
IN THE U.S. ARMY

–TECHNICAL APPENDICES–

INTRODUCTION

The body of the report analyzing the unit race relations training program in the U.S. Army was written primarily for the non-technical reader. Detailed discussion regarding sampling procedures, data processing, and specific statistical analyses was not included in the body of the report. Information in these areas have been treated as separate technical documents and are presented here as appendices to the basic report.

There are six appendices. Appendix A is a discussion of the particular methods used in selecting the companies for inclusion in the surveys and in identifying the particular individuals requested for the sample.

The instrumentation used in the study is discussed in Appendix B. Included are detailed discussions about each of the interview forms and questionnaires. Particular attention is given to the RR/EO Program Survey, with detailed information provided about the pretesting procedures and results of item analyses and factor analysis.

Data processing procedures are described in Appendix C. This covers such areas as standards for exclusion of questionnaires and the effects of deleted respondents.

In Appendix D is a detailed discussion of the relationship between various demographic variables and attitudes, perceptions, behavior and knowledge levels.

In Appendix E is a discussion of the selection of units with higher and lower quality training programs. The effects of training on personnel in the units is considered using analysis of variance and covariance analysis.

Finally, Appendix F contains results of statistical tests for tables contained in the report.

APPENDIX A

SURVEY SAMPLING PLAN

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SURVEY SAMPLING PLAN

The sampling plan used to obtain respondents for the questionnaire involved two stages of selection. First, companies at each location were selected, and second, the sample of respondents within those companies was chosen.

Selection of Companies

The objective in selecting the specific companies was to obtain a sample of companies which was organizationally dispersed and which represented the diverse types of units present on a post. An organization chart was obtained for each location. Based on the information contained in the chart, those companies with less than 50 persons assigned were eliminated, and a list was drawn up of the companies available for each major organizational element (such as a brigade, or the DISCOM). At TRADOC installations we also eliminated training companies, since, in general, these units have fewer than 50 cadre.

At posts with a full division assigned, we selected 12 companies; posts with less than a full division had proportionately fewer companies selected, down to a minimum of 7 companies. (Fort Hood had 8 companies selected from each of its two divisions, rather than 12, in order to keep the data collection there within manageable limits.) In attempting to get the best dispersion possible we set up the following procedures:

1. Take the list of companies and randomly select one company from some place on the list. Once one company is selected from a major organizational element, then no other company should be selected from that organizational element until all organizations are represented in the sample.

2. In order to assure representation for both headquarters-type units and line units, an approximate ratio of one to three should be selected. Thus, once the first company has been selected at random, it is necessary to determine if it is a headquarters type of unit. If so, then the next three units should *not* be headquarters units. If the first three selected are not headquarters units, then the fourth should be. This balance should be maintained throughout the sampling.

In this manner the sample of companies was chosen for each post, emphasizing maximum diversity rather than strict randomness.

Selection of Respondents

It was considered important that each company be provided with a by-name list of the members of that company selected to participate in the survey. Companies were not, therefore, allowed to select only those people most readily available or those people they felt would best represent them, since the randomness of the sample within each company was an important factor.

The point of contact at each location obtained a roster for each company selected. Then, a member of the research staff and/or the point of contact selected the sample using the following procedures:

1. If N<200, take a 40 percent sample of the company. This is to be done as follows:

   (a) Take a random starting point on the company roster.

   (b) Flip a coin to determine if the first interval is to be 2 or 3.

   (c) Begin to count down the list, first taking every second name, then every third until the list is completed back to the starting point.

   (d) Do not count O6's and up. They are to be excluded.

2. If N>200, a maximum of 80 people are to be taken. This is to be done as follows:

   (a) Determine the sampling ratio by dividing 80 by the N. Round off to the nearest of the following:

33%	1 in 3
25%	1 in 4
20%	1 in 5
16%	1 in 6
12%	1 in 8

(b) Select a random starting point.

(c) Select the sample.

3. Once the samples are drawn, a 10 percent oversample should be drawn to serve as alternates.

The companies were advised of the individuals selected for the primary sample. If people were unable to attend, then the company notified the point of contact who provided the names of alternates from the oversample list.

APPENDIX B

SURVEY INSTRUMENTATION

APPENDIX B

SURVEY INSTRUMENTATION

This appendix contains a description of the rationale and procedural steps involved in the development of the 12 separate data collection instruments used in the phase of the study described in this report. The instruments included six questionnaires, two guides for individual interviews, and four group interview guides. Eight distinct respondent groups were involved in the study. These groups are identified in Table B-1, with the instruments designed for use with each group.

Overall Rationale

The guiding principle in sample design and in instrument development was to insure the acquisition of accurate information on: the nature of the unit training program in the Army; the perceived objectives of the program; attitudes toward the program; effects of the program on individuals' behaviors, attitudes, perceptions, and knowledge; suggestions for improving the program; and to acquire that information from as broad a range of respondent groups as possible. Also, to the extent possible, the intent was to elicit comparable information from the various respondent samples to allow for a comparison of perspectives. Thus, wherever possible, the same questions were asked in the same way of all samples, in addition to questions designed specifically for each sample and each separate instrument.

The RR/EO Program Survey

Because the primary focus of the study is on description and evaluation of the unit training program, the RR/EO Program Survey was designed as the primary source of data, with all other sources being supplementary in nature. The RR/EO Program Survey (designated by its Army control symbol as PT 5124) was, therefore, the most extensive of the instruments, and was administered to the largest respondent sample. It was designed as a self-administered questionnaire.

Table B-1

Respondent Groups and Data Collection Instruments

1. Systematic random sample of personnel (enlisted and officer) from selected company-sized units.	1. RR/EO Program Survey (Questionnaire)
2. Commanders of selected company-sized units.	2a. Unit Commander Interview (individual) 2b. Unit Commander Questionnaire
3. Commanders of selected battalions and brigades	3. Senior Commander Interview (individual)
4. Junior Enlisted Personnel (E1-E5)	4a. Enlisted Interview (group) 4b. Enlisted Questionnaire
5. Senior Enlisted Personnel (E6-E9)	5a. Enlisted Interview (group) 5b. Enlisted Questionnaire
6. Graduates of Defense Race Relations Institute (DRRI)	6a. DRRI Graduate Interview (group) 6b. DRRI Graduate Questionnaire
7. Graduates of local Discussion Leaders Courses (DLC)	7a. DLC Graduate Interview (group) 7b. DLC Graduate Questionnaire
8. Primary Duty RR/EO Staff not graduates of DRRI or DLC	8a. RR/EO (untrained) Interview (group) 8b. RR/EO (untrained) Questionnaire.

Commander Interviews and Questionnaires

The Army's Unit Training Program in RR/EO in its present form is a chain-of-command program, with primary responsibility for the program's success resting with the unit (company, troop, detachment) commander. The Unit Commander Interview was designed as an individual interview to focus on the procedural aspects of the unit training program as it was carried out in the selected units, as well as on the more subjective philosophical and attitudinal perspectives of the individual commanders. The interview was structured to the extent that key questions were asked routinely, but answers were not precoded and the interviewer was free to probe to the extent necessary to elicit a complete and meaningful response. The Unit Commander Questionnaire was designed to be self-administered and followed a precoded, multiple-choice format to allow direct, efficient, quantitative comparison across companies and installations. The Unit Commander Interview provided a more qualitative information base which was an aid to interpretation of the quantitative data obtained in the Questionnaire.

The Senior Commander Interview was also an individual interview guide. This approach to data collection allowed us to go one and two echelons higher in the chain of command to learn about the environment of command support within which the unit training program was being conducted. No questionnaire was designed for battalion and brigade commanders, primarily because their relatively small number (especially brigade commanders) would not allow for maximum protection of anonymity, and secondarily because of constraints on the time available. It was felt that the interview would yield more useful data in the available time than would a questionnaire.

Enlisted Interviews and Questionnaires

Because the bulk of respondents to the RR/EO Program Survey (RPS) were projected, on the basis of the composition of company-level units, to be enlisted personnel, it was seen as desirable to supplement the RPS data with group interview information obtained from both junior (E1-E5) and senior (E6-E9) enlisted personnel. The purpose of the group

interviews was, again, primarily to elicit subjective-attitudinal and perceptual information to supplement and aid in the interpretation of the RPS responses. Since none of the group interviewees had completed the RPS (in theory, at least), an additional, abbreviated, Enlisted Questionnaire was prepared for those who were interviewed.

The interview guide was identical for both junior and senior groups, as was the questionnaire. However, procedurally, each interview group consisted of persons of similar rank; i.e., junior and senior enlisted personnel were never mixed in the same group. This procedure served to promote the favorable aspects of communication among peers and to eliminate the adversary relationship often reported to exist between junior enlisted personnel and non-commissioned officers, especially in regard to human relations topics.

DRRI and DLC Interviews and Questionnaires

The Defense Race Relations Institute (DRRI) is the MOS-granting training institution for RR/EO-related work. DRRI, along with Discussion Leaders Courses (DLC's) initiated and operated at local installation level, are the sources of training for RR/EO staff and instructor personnel in the Army in CONUS. It was deemed desirable, therefore, to ask graduates of these two schools for their perspectives on the unit training program. While the DRRI and DLC interview guide and questionnaire dealt with the same basic core of program-related questions, each had some additional questions concerning training for RR/EO work. This focus was in conjunction with the objectives of Phase III of the study, a program analysis of DRRI training.

As before, the interviews were relatively open, the questionnaires of the multiple-choice type. Group interviews included up to eight persons, all those in the group having had the same type of training, either DRRI or DLC.

RR/EO (Untrained) Staff Interview and Questionnaire

The final set of instruments was designed for use in group interviews with those individuals, officer and enlisted, who found themselves in positions with primary duty as

RR/EO staff persons, but who had not attended either DRRI or a local DLC. Again, a group interview designed to stimulate discussion in response to specific questions was followed by completion of a questionnaire by each respondent in the group.

Initial Development of the RPS

Because the RPS was viewed as the primary source of data about the unit training program and its effects, it was programmed to be the most extensive of the 12 data collection devices. Its development was initiated first, consumed the greatest amount of effort, and served as a guide for the development of the remaining instruments.

Based on the objectives of the study—to develop a comprehensive description of how the unit training program is carried out in the Army and to assess the impacts of unit training—it was determined that the RPS should have major sections for eliciting information on:

1. The respondents' experiences with the unit training program;
2. The respondents' behavior and their perceptions of the behavior of others in situations (interpersonal and interracial) which could be assumed to reflect program effects;
3. The respondents' attitudes toward topics concerning race relations and equal opportunity, again reflecting program effects, and perceptions of conditions relating to RR/EO in the Army;
4. The respondent's knowledge of facts about Army RR/EO policy and information about various cultures.

In addition, a fifth section was added to ascertain certain facts about the respondents' personal and military background.

Initial development of the RPS was performed in accordance with guidelines suggested by Nunnally and Wilson.[1] The instrument development process began with

[1] J.C. Nunnally and W.H. Wilson, "Method and Theory for Developing Measures in Evaluation Research," Chapter 9 in E.L. Struening and M. Guttentag (eds.), *Handbook for Evaluation Research, Volume I.* (Beverly Hills: Sage Publications, 1975).

the assignment of responsibility for each section to a different staff member. Each individual then set out to define the total range of relevant content within his or her section. There were three major sources of information for this task:

1. AR 600-42, entitled Race Relations Education for the Army, effective 1 February 1974;

2. Interviews conducted at three major Army installations in CONUS with members of all the projected respondent groups described in Table B-1 (above); and

3. Lesson plans and curriculum guides produced and used by various groups (commands, installations, offices) within the Army.

In addition, the HSR Race Library, with its extensive array of Army personnel regulations and Army and civilian publications concerning RR/EO matters was used quite frequently. The end result of this task was a set of five lists of "information requirements," one for each major section of the RPS. Each of these lists was reviewed by several staff members, first for the purpose of insuring adequate identification of relevant content areas and then for the purpose of reducing the lists to only those items seen as directly relevant to the objectives of the study. These final, condensed lists were the basis for questionnaire item development.

As an example of these "information requirements" lists, the list concerned with describing the unit training program contained such entries as:

- frequency of unit seminars;
- duration of seminars;
- seminar format;
- seminar content;
- instructor characteristics;
- chain of command participation;
- attendance requirements for unit members;
- etc.

The list of information requirements for the knowledge section contained such entries as:

- knowledge of basic concepts such as:
  - prejudice
  - stereotype
  - personal racial discrimination
  - institutional racial discrimination
  - polarization
  - affirmative action
  - etc.;
- knowledge of DOD, Army, unit RR/EO policy;
- knowledge of minority culture;
- knowledge of non-military RR/EO topics such as:
  - school busing to achieve racial balance
  - the Equal Rights Amendment
  - Title IX of PL 92-318
  - etc.

For the most part, topics deserving coverage under the knowledge section also were viewed as appropriate objects for attitude and perception items; thus, there was a great deal of overlap in content across those sections.

The next step in the development process involved the collation of specific questionnaire items to fill the information needs previously defined. The major sources of items were pre-existing instruments contained in HSR's library, in the Army Research Institute files, or readily available from some other source without undue complication (e.g., copyright questions, proprietary rights, etc.). Only when items were not available that had been used before and whose psychometric characteristics were known were new items created to fill the information gaps. Well over half of the attitude, perception, and knowledge items were already in existence. The specific unit training items and the behavior items were created entirely for this study.

A policy decision had been made previously to use a check-off response format for all items. For the unit training, attitudes and perceptions, and knowledge sections as well as the respondent background items, standard formats were applicable; e.g., a five-point, Likert-type, agree/disagree format was usable for virtually all the attitude and perception items, and multiple choice and true/false (or yes/no) formats for knowledge questions. The major problem was in finding an acceptable way of asking behavior-related items, but format was not the only consideration here.

Reports of one's own behavior or the behavior of others as data sources have some decided shortcomings. In the present case, however, direct observation of respondent behaviors was obviously impractical. Behavioral self-reports, estimated frequency of observed behaviors on the part of others, and stated behavior intentions were finally settled upon as the most workable methods of assessing program effects on behavior, despite their obvious shortcomings in terms of being subject to conscious and/or unconscious distortion. These were worked into quick-response formats, using scales of likelihood for behavior intentions, and frequency for self-reports and observation of others' behaviors.

The amount of information desired from each respondent appeared overwhelming at this point. Nevertheless, it was determined that the initial pretest draft should have a substantial number of items for each of the individual information requirements, so that alternative methods of acquiring the same information could be compared. A minimum of three questionnaire items per information requirement, and a maximum of ten, were established as design goals. The initial review draft contained nearly 1,000 separate items. Staff review of this version cut the total number to about 600 items, some having multiple parts. This 600-item questionnaire was then pretested.

Initial Pretest of the RPS

The initial version of the RPS was pretested at Fort Lee, Virginia, on a respondent sample of approximately 50 white and 50 minority Army personnel. Administration of the questionnaire was done separately by race, each group consisting of from 12 to about 30 individuals, with a same-race (white or minority) survey administrator from HSR. After a relatively detailed introduction concerning the purpose of the questionnaire, the purpose of the pretesting procedure, and an explanation of what was expected of the pretest respondents, a questionnaire was completed by each member of the group. Respondents were instructed to note on the questionnaire any items they felt were difficult to deal with for any reason—ambiguity, unfamiliar wording or terminology, sensitive content, level of reading skill required, etc. As each person completed his or her questionnaire, the survey administrator asked the respondent a few basic questions about problems with the questionnaire, and

noted on the questionnaire any difficulties described. Feedback on the questionnaire, then, was from both written, spontaneous notes on the questionnaire and orally, in response to specific questions.

With the exception of the excessive length of the instrument, which respondents had been told was intentional and which was to be reduced by means of the pretesting process through their input, no single problem or objection predominated, and no individual item was singled out as particularly troublesome or objectionable. Respondent verbal feedback, then, did not, in itself, help reduce the length of the questionnaire nor did it provide an abundance of information by means of which the individual items might be improved. Statistical analysis of the pretest results, however, did aid tremendously in improving the RPS.

Results for each item were tabulated separately for majority and minority respondents, and the response patterns closely scrutinized. This allowed for elimination or revision of items which were consensus items and those which correlated perfectly, or nearly so, with race. It also aided in the detection of ambiguous items since these items often produce anomalous response patterns. Through this pretesting and feedback process, about 200 items were eliminated overall, while retaining adequate item coverage of each information requirement identified earlier. In addition, improvements were made in wording and in response format for numerous other items. This reduced version of the RPS was then subjected to a second pretest, essentially a pilot test of the instrument and the administrative procedures to be employed in the full-scale data collection phase of the study.

Pilot Test of the RPS

Two major Army installations in the Eastern U.S. were the sites for the pilot test of data collection instruments and procedures. In addition to the RPS, the other questionnaires and interviews were also tested at this time, as were the administrative procedures for sample selection, scheduling, and data collection. The RPS was administered to a total of 499 individuals at the two installations. Of these, 262 were black, 211 were white, and 26 classified themselves as neither white nor black.

Upon completion of the pilot administration of the RPS, the results were tabulated and reviewed once again to identify areas of potential improvement. In addition, a factor analysis of the attitude and perception items was performed and numerous items eliminated on the grounds that they were measuring essentially the same thing as other items. Further wording refinements were made. Finally, a staff conference was held for the purpose of eliminating any remaining items which could not be justified as directly relevant to the objectives of the study.

Attitudes and Perceptions

The items in the Attitudes and Perceptions section of the RPS which used a five-point, Likert-type agree/disagree response format, were again subjected to a factor analytic procedure after all Phase II data had been acquired. This analysis made use of the SPSS program[2] for principal factoring with iteration, using a varimax rotation procedure. The procedure parameters were set at minimum eigen-value = 1.0; maximum number of iterations = 25. (Twenty-three iterations were required for convergence.) Missing data values were replaced with the mean value of the sample for that particular item. The sub-sample of respondents employed in this analysis consisted of 600 randomly selected individuals from the total respondent sample. The first eight factors defined by this procedure were retained. The items included in these eight factors along with their factor loadings, appear in Table B-2. The factors were highly similar to those identified in the factor analysis of pretest data.

[2]Jae-On Kim, "Factor Analysis" in C.H. Hull, J.G. Jenkins, K. Steinbrenner and D.H. Bent (eds.), *SPSS Statistical Package for the Social Sciences* (New York: McGraw-Hill, 1975), 2nd Edition, pp. 468-514.

Table B-2

Factor Loadings of Attitude and Perception Items

Factor Loading	Factor 1—Item
0.79211	45. In my unit, Whites get away with breaking rules that non-Whites get punished for.
0.77902	65. A Black in the Army must do more than the average White to make the grade.
0.74080	44. Non-Whites get more than their share of dirty details.
0.73847	88. Whites have a better chance than non-Whites to get the best training opportunities.
0.73655	32. Whites try to force their attitudes and ways upon minorities.
0.72421	39. Whites do not show proper respect for Blacks with higher rank.
0.71767	33. Whites assume that non-Whites commit any crime that occurs, such as thefts in living quarters.
0.71582	30. White enlisted personnel and supervisors act as though minority soldiers have to "earn the right" to be treated equally.
0.67265	34. Non-Whites have had to become "militant" in order to have their complaints taken seriously.
0.65417	54. Most Whites in the Army don't want racial minorities to be treated equally.
0.64950	66. Any time a minority soldier acts like he's proud of his race, he can expect to get treated badly by his CO.
0.64008	81. In my unit, non-Whites get worse jobs and details than Whites
0.59883	96. Army officers get back at Blacks they think are "militant" by not recommending them for promotions.
0.58782	*78. White soldiers get hassled by the Army as much as minority soldiers do.

*The starred items were scored in the reverse direction from the other items; i.e., "strongly agree" was scored 5 rather than 1.

Table B-2 (Continued)

Factor Loading	Factor 1—Item
0.58550	79. Many Army supervisors try to make it difficult for minority personnel to go through the chain of command to present a complaint of discrimination.
0.54066	41. Most Whites in the Army seem to think that Blacks aren't very intelligent.
0.49963	47. Troop commanders at this post should pay more attention to meeting the needs of minority group members.
0.47983	*60. Blacks get treated as well as Whites now.
0.44647	42. Racial tension in my company is so bad it often interferes with people getting their work done.
0.43101	37. The Army should lower its standards to allow more minority group soldiers to qualify for technical training.
0.42671	*101. Equal opportunity exists right now for minorities in the Army.
0.40489	*104. Whites in the Army seem to believe that most Puerto Ricans are lazy.
0.38516	*108. More emphasis should be put on minority history in the public schools.
0.36271	*80. In my company, most people treat each other as equals, regardless of race.

Table B-2 (Continued)

Factor Loading		Factor 2—Item
0.65742	56.	The Army's RR/EO program helps minorities get ahead at the expense of Whites.
0.64683	92.	White middle-class Americans are giving up too many of their own rights for the rights of others.
0.62213	36.	Non-Whites get away with breaking rules that Whites are punished for.
0.62175	51.	Many non-Whites have begun to act as if they are superior to Whites.
0.61059	57.	Most minority group members haven't worked as hard to succeed as most Whites have.
0.56575	85.	Most non-Whites tend to be loud and boisterous.
0.56056	91.	There is racial discrimination against Whites on this post.
0.51293	106.	Most non-Whites don't really want to be promoted to positions of responsibility.
0.48870	58.	Racial and ethnic minorities should act more like Whites if they want to achieve success.
0.46699	83.	Most minority personnel aren't very capable of handling supervisory positions.
0.45464	76.	In the long run, dating between Blacks and Whites can only cause trouble.
0.44445	49.	Blacks were better off before this integration business got started.
0.41113	59.	Black power is a dangerous thing.
0.39848	97.	Black soldiers avoid contact with Whites whenever they can.

Table B-2 (Continued)

Factor Loading		Factor 3—Item
0.74451	43.	Race relations seminars are a waste of time.
0.66685	82.	Most of the Army's RR/EO programs are unnecessary.
0.66260	*67.	In the long run, everybody in the Army will benefit from race relations and equal opportunity programs.
0.64466	*38.	Everybody in the Army should be *required* to attend race relations seminars.
0.59247	*63	I understand people of other races better since I've taken part in race relations education programs.
0.48129	100.	RR/EO programs on this post are mostly just for show.
0.43345	93.	If someone is a racist there is nothing an RR/EO program can do to change his mind.
0.40437	70.	The Army has no business trying to tell me how to treat other people.

Factor Loading		Factor 4—Item
0.55138	*90.	Most officers usually see to it that RR/EO policies and regulations are enforced.
0.47342	*31.	Most NCO's usually see to it that RR/EO policies and regulations are enforced.
0.42230	*52.	The Army is firmly committed to the principle of equal opportunity.
0.38026	100.	RR/EO programs on this post are mostly just for show.
0.37455	*87.	In my work unit people get treated according to theis skills and abilities.
0.36816	*64.	Everybody in my work unit gets *exactly* the same treatment from the supervisor regardless of race.

Table B-2 (Continued)

Factor Loading		Factor 5—Item
0.60111	68.	The most effective units are the ones where people talk freely with each other about what's bothering them.
0.45144	53.	Company morale is better when people of different races talk openly about their complaints.
0.42977	72.	White people have a better attitude toward racial minorities in this country today than they did ten years ago.
0.41110	62.	I am in favor of equal opportunity for minorities in the Army.
0.39009	48.	The Army's program for equal opportunity in off-post housing is a good way to stop discrimination in housing.

Factor Loading		Factor 6—Item
0.74615	71.	Equal opportunity exists right now for women in the Army.
0.60439	50.	Women in the Army get as many opportunities for training, promotions, and awards as men do.
0.40922	61.	In the Army, men and women doing the same job usually get equal respect from their supervisors.

Factor Loading		Factor 7—Item
0.59431	94.	Women *should* be allowed in West Point.
0.56879	35.	All MOS's should be open to enlisted women.
0.36184	73.	A woman's place is in the home.

Factor Loading		Factor 8—Item
0.68935	75.	The Black Liberation flag should not be allowed to be displayed in the barracks.
0.46137	95.	The Confederate flag should not be allowed to be displayed in the barracks.

The eight scales used in subsequent analyses were labelled as follows:

- Factor 1 Perceived Discrimination against Minorities (24 items with factor loading of 0.35 or higher).
- Factor 2 Feelings of Reverse Racism (14 items).
- Factor 3 Attitudes toward Army RR/EO programs (8 items).
- Factor 4 Army Commitment to RR/EO goals (6 items).
- Factor 5 Communication in the Unit (5 items).
- Factor 6 Sex Discrimination (3 items).
- Factor 7 Perceptions of Professional Opportunities for Women (3 items).
- Factor 8 Flags as Cultural Symbols (2 items).

In addition to these 65 items which loaded 0.35 or higher on a single factor, 43 items not loading sufficiently highly on any factor were retained simply for their value in describing the Army's attitudinal and perceptual environment.

Reliability

As an estimate of the upper limit of reliability for these scales, coefficient alpha was computed for each scale. The results were as follows:

Factor 1—coefficient alpha = 0.930
Factor 2—coefficient alpha = 0.861
Factor 3—coefficient alpha = 0.838
Factor 4—coefficient alpha = 0.730
Factor 5—coefficient alpha = 0.667
Factor 6—coefficient alpha = 0.609
Factor 7—coefficient alpha = 0.497
Factor 8—coefficient alpha = 0.459

Quite obviously, the factors with fewer items could benefit from the addition of new items of the same type. The internal consistency of at least the first four factors, however, appears quite acceptable.

Validity

Looking at validity of the Attitude and Perception Scales, we would consider three types: predictive; content; and construct validity.

The most meaningful criterion for establishing predictive validity of an attitude scale would be a behavior measure which corresponds to the attitude being measured, although it is far from clear that there is close correspondence between stated attitudes and observed behaviors. At any rate, in the present case it was impractical to obtain such measures, so that no such behavioral criterion could be established. In the case of perceptions, such as the first factor, Perceived Discrimination against Minorities, no behavioral or other criterion is suitable as a measure of validity, and we are forced to accept a stated perception as the perception the respondent actually holds of a given situation. In summary, then, no evidence of predictive validity of these scales can be presented here, if, in fact, it is appropriate to talk of predictive validity for attitude or perception measures at all.

There is some evidence for construct validity in the *intercorrelations* of some of the factors. For example (see Table B-3), Factor 1, Perceived Discrimination against Minorities, would be expected to correlate negatively with a "White Backlash" (or "Reverse Discrimination") factor, and it does. However, few such hypotheses can be generated, and evidence for construct validity is limited, and in some cases negative (e.g., one might predict a negative relationship between Perceived Discrimination against Minorities and Army Commitment to RR/EO Goals when in fact a moderately high positive correlation is found).

The strongest evidence for scale validity is in the area of content validity, where we can talk about three separable aspects: face validity; sampling validity; and factorial validity. Face validity, of course, means that items are used which look like they are related to the quality being measured, and in the present case that is certainly true. In terms of sampling validity, the procedures described earlier in this appendix for defining and sampling the

relevant domains of content provide evidence for that aspect of content validity. And the factor analysis results reported here support the argument for the validity of the scales.

Table B-3

Intercorrelations of Attitude and Perception Factor Scores

FACTOR	1	2	3	4	5	6	7	8	Total
1	—								
2	-0.260	—							
3	-0.191	0.437	—						
4	0.333	0.089	0.187	—					
5	0.044	0.297	0.427	0.236	—				
6	0.168	-0.050	0.039	0.255	0.067	—			
7	-0.163	0.031	0.069	-0.118	0.071	-0.064	—		
8	-0.192	0.255	0.099	-0.094	0.084	-0.069	0.113	—	
Total	0.682	0.374	0.405	0.539	0.464	0.299	0.032	0.090	—

Behavior Measures

In order that company-specific comparisons of "behavioral climate" could be made, a method was devised for computing a composite "reported frequency of positive behaviors" score. A total of 52 items were selected from the 90 items contained in Part IV of the RPS as qualitative indicators of verbal and non-verbal interpersonal interaction. The composite score for each individual respondent was computed as the mean of the individual item scores, with the more positive behaviors receiving a score of 5 when answered "Very Often" (for behavior observations), or "Definitely Would" (for behavior intentions); a score of 1 when reported "Never" or "Definitely Would Not"; and scores of 4, 3, and 2 for intermediate points. Negatively-phrased items were scored in reverse. The individual item scores were summed, and the sum divided by the number of items answered. The company score was computed as the average of the individual scores of all company members.

Knowledge Measures

The knowledge section of the RPS is divided into four separate parts: 10 "true/false" factual knowledge items; 8 questions concerning knowledge about Army policy; 8 items in a multiple choice format which deal with recognition of examples of various concepts basic to understanding RR/EO; e.g., stereotyping, segregation, affirmative actions; and 11 multiple-choice questions on general factual material concerning minority culture and current events in the RR/EO area. These items were retained from the original pool of knowledge items because they: had a range of item difficulty levels (proportion of a norming sample giving the correct answer) between about 0.30 and 0.70, averaging about 0.50; were seen as things which might and should be covered in the unit seminars outlined in AR 600-42; and had high item intercorrelations and high item-total score correlations. All of these are desirable factors for increasing the validity and internal consistency reliability of the measures.

Four knowledge subscores were computed for each respondent, corresponding to the four sections described above. Each individual's score was simply the number correct, without weighting. Table B-4 shows that there were realtively high scale intercorrelations and very high scale score-total correlations.

Table B-4

Knowledge Scale Intercorrelations

SCALE	1	2	3	4	Total
1	1.0000	0.7214	0.7852	0.7481	0.9434
2		1.0000	0.5823	0.4234	0.8131
3			1.0000	0.6740	0.8578
4				1.0000	0.8891
Total					1.0000

Validation of the relationship between these questions and a general acquaintance with the RR/EO area came from an independent source. These knowledge items were administered to a cohort of DRRI students upon their arrival at the Institute; i.e., before they had received any orientation or training there. Most, if not all, of these students had, however, been employed in some capacity in RR/EO assignments prior to attendance at DRRI. For this particular group, difficulty levels ranged from 0.70 to 1.00, making it a very easy test for them.

Development of Other Interviews and Questionnaires

The remaining data collection instruments were developed to supplement the RPS. The questionnaires were made up primarily of a core of items taken from the RPS concerning the operation of the unit training program and experiences with that program. The interviews were designed to elicit information which would add to the questionnaire data but which could not be conveniently asked using a closed-ended response format.

All instruments were subjected to a series of rigorous screening, pretesting, and pilot testing steps such as those described for the RPS.

APPENDIX C

DATA PROCESSING PROCEDURES AND EFFECTS OF DATA EDITING

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DATA PROCESSING PROCEDURES AND EFFECTS OF DATA EDITING

The manner in which the data is handled is of great importance in any research. The process used in this study involved several stages: (1) the data was coded and checked before keypunching; (2) the data was keypunched; (3) the data was checked again; (4) the data was edited; (4) the data was stored on magnetic tape; and (5) statistical analyses were performed. This process and its effects on the data is described in detail below.

Coding and Checking

The data collected at the CONUS and Pacific sites included 5,299 RPS questionnaires. These questionnaires were hand sorted and coded by post and by unit. All the questionnaires were then checked for completeness and any with large sections of missing data or with notable irregularities were set aside. A second person then reviewed all the surveys which had been set aside and determined if they had too much data missing to be usable. In general, those surveys with 15 percent or more missing data were eliminated. By this process some 388 questionnaires were eliminated before keypunching.

Keypunching

The surveys were keypunched by a professional keypunching firm. Each survey was keypunched utilizing five standard, 80-column cards with an identification field repeated on each card. The cards were keyverified with a guarantee of 99.5 percent accuracy.

Checking

A computer program was written which took the deck of cards for each post and checked the data to be sure that each case had five cards, that the cards for each case were in the proper order, and that the values punched were not in error. It checked for keypunch errors by determining if the number punched in any given column was within the value range for that column. In this manner the deck was "cleaned" and readied for processing.

Data Editing

A second computer program was written to edit the data. Since all the basic statistical analyses were to be performed by race, this program eliminated any case in which the race information was missing. The program also checked on the amount of missing data, and any case with more than ten percent missing data was eliminated. In those cases remaining the program further checked on two branching questions where if a respondent answered the questions in a certain manner he or she was supposed to skip the next series of questions. The program checked on the manner in which those two questions were answered and if the respondent was expected to skip items the program blanked the questions which should have been skipped. This insured that respondents who had not received training were not allowed to answer questions about that training.

Through this editing routine 175 respondents were eliminated for missing racial information and 396 respondents were eliminated for too much missing data.

Data Storage

The data were transferred from cards to a disk, and from the disk to a standard nine-track magnetic tape. Both the cards and the tape were preserved as backup and for future uses.

Statistical Analyses

The bulk of the statistical analyses were performed on an IBM-370 system using Statistical Package for the Social Sciences (SPSS)[3] procedures.

Effects of Editing Procedures on the Sample

All the checking and editing procedures utilized resulted in a reduction of the total sample from 5,299 cases to 4,340 cases, a loss of 18.1 percent. The original sample was composed of 25.0 percent black respondents, 64.5 percent white respondents, 7.3 percent "other" respondents, and 3.3 percent respondents with race unknown. The final sample differed from the original racial breakdown, with 23.9 percent black, 68.6 percent white, and 7.5 percent other respondents. There was an overrepresentation of whites and an underrepresentation of blacks in the final sample (chi square = 8.79, df = 2, $p < .02$).

There is no readily apparent reason for the greater representation of blacks in the group that was eliminated as the result of the editing procedures. Tests of differences between respondents who were eliminated and respondents who were retained showed no significant differences in educational level, in rank, or in measures of attitudes toward the RR/EO program, all of which were hypothesized as causes for failure to complete the questionnaire. The differences in representation should not greatly affect the statistical analyses, however, since these analyses were generally aimed at developing separate measures for each racial group rather than across groups, and no within-group differences which would bias the findings have been detected.

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[3]C.H. Hull, J.G. Kenkins, K.Steinbrenner and D.H. Bent (eds.), *SPSS Statistical Package for the Social Sciences* (New York: McGraw-Hill, 1975), 2nd Edition.

APPENDIX D

ANALYSIS OF VARIABLES RELATED TO ATTITUDES, PERCEPTIONS, BEHAVIOR AND KNOWLEDGE

APPENDIX D

ANALYSIS OF VARIABLES RELATED TO ATTITUDES, PERCEPTIONS, BEHAVIOR AND KNOWLEDGE

Racial attitudes, perceptions, behavior and knowledge cannot be understood apart from the demographic variables which are related to them. In order to develop a better understanding of what these relationships are for the present study, an analysis of certain demographic variables has been undertaken. The results are presented in this Appendix, which is organized into three basic sections. The first section shows the relationships between demographic variables. This is followed by a description of the relationship between the demographic variables and the scale scores described in Appendix B. The final section is a presentation of the mean scores for individual scales by selected demographic variables.

Relationship between Demographic Variables

Seven demographic variables were selected for analysis. These were Age, Sex, Race, Grade, Educational Level, and Time on Active Duty.

Table D-1 shows the age distribution of the respondents in the sample.

Table D-1

Age of Respondents
(N = 4,334)

	Number	Percent
Nineteen years or less	655	15
Twenty to 21	1,099	25
Twenty-two to 23 years	737	17
Twenty-four to 29 years	1,023	24
Thirty to 39 years	638	15
Forty years or over	182	4

Clearly, a large percentage of respondents were under 30 years of age, and some 58 percent were under 25 years of age.

Respondents were predominantly male. The sample included 4,089 men (95 percent) and 237 women (5 percent).

The racial makeup of the sample was: blacks, 1,031 (24 percent); whites, 2,970 (69 percent); and others, 321 (7 percent). The "other" group consisted of 151 Spanish-speaking persons (47 percent); 57 Asian Americans (18 percent); 51 native Americans (16 percent); and 62 of other ethnic backgrounds (21 percent).

Table D-2 shows the grade distribution of the respondents. As would be expected, 93 percent were enlisted with most of those being personnel in Grades E1 to E4. There were a small number of officer personnel, with most at the company grade level.

Table D-2

Grade of Respondents
(N = 4,318)

	Number	Percent
E1 - E4	2,587	60
E5 - E9	1,426	33
Warrant Officers	38	1
O1 - O3	207	5
O4 and higher	60	1

Educational level was another variable considered. As Table D-3 shows, only eight percent of the respondents have less than a high school education. The largest group are the high school graduates, with many respondents having at least some college.

Table D-3

Educational Level of Respondents
(N = 4,295)

	Number	Percent
Less than high school graduate	352	8
High school graduate or G.E.D.	2,478	58
Some college	1,049	24
College graduate or higher	416	10

Finally, time on active duty was analyzed. Table D-4 shows the results.

Table D-4

Time on Active Duty
(N = 4,023)

	Number	Percent
Less than one year	587	13
One to three years	1,983	46
Four to six years	707	16
Seven to nine years	316	7
Ten to fifteen years	351	8
Sixteen to twenty years	271	6
More than twenty years	117	3

Almost half of the respondents (46 percent) have been in the service from one to three years. And 82 percent have been on active duty less than ten years.

These results provide a picture of the typical respondent as being male (95 percent), under 30 years of age (80 percent), in Grades E1 through E4 (60 percent), less than three years on active duty (59 percent), and at least a high school graduate (92 percent).

It is also true that these variables are related. Table D-5 shows the intercorrelations between demographic variables. These data were calculated using only black and white

Table D-5

Intercorrelation between Demographic Variables
($N \approx 4,000$)[4]

	Age	Sex	Race	Grade	Education	Time on Active Duty
Age	--	.05	-.02	.56	.36	.78
Sex		--	.00	-.06	.05	-.12
Race			--	.11	.10	.00
Grade				--	.64	.52
Education					--	.20
Time on Active Duty						--

respondents. The non-black minorities were dropped because of the non-homogeneous nature of that group. In addition, the small sample size and the difficulties inherent in calculating correlations using three racial categories led to this decision. Pairwise deletion was used for missing data. The scoring was as follows:

Age

Nineteen years or less	1
Twenty to 21 years	2
Twenty to 23 years	3
Twenty-four to 29 years	4
Thirty to 39 years	5
Forty years or over	6

Sex

Male	1
Female	2

Race

Black	1
White	2

[4] Because pairwise deletion for missing data was used, the N varies by item. A case is omitted from the computation of a given coefficient if the value of either of the two variables being considered is missing.

Grade

		WO1	10
E1	1	WO2	11
E2	2	CW3	12
E3	3	CW4	13
E4	4	O1	14
E5	5	O2	15
E6	6	O3	16
E7	7	O4	17
E8	8	O5	18
E9	9	O6	19
		O7-O10	20

Education

Less than 8th grade	1
Some high school	2
High school graduate or G.E.D.	3
Some college	4
College degree	5
Some graduate work	6
Advanced degree	7

Time on Active Duty

Less than one year	1
One to three years	2
Four to six years	3
Seven to nine years	4
Ten to fifteen years	5
Sixteen to twenty years	6
More than twenty years	7

Table D-5 and subsequent correlation tables were developed using this scoring system. There are clearly four variables which are highly related: Age; Grade; Education; and Time on Active Duty. This is as expected. The longer a person is on active duty, the older he gets and the higher his grade tends to be. In addition, education is higher. This is true for two reasons. As a person gets older, he tends to get more schooling. Also, higher educated persons tend to begin at a higher grade (as with new officers having college degrees).

The strongest correlation is betwen Age and Time on Active Duty (.78). The next strongest is between Education Level and Grade (.64). This latter is undoubtedly a function of the requirement that officers have college background. Grade is also related to Age (.56) and Time on Active Duty (.52).

A much more moderate correlation exists between Age and Education (.36). This, of course, points out the monotonic relationship between such factors as Age, Education, and Time on Active Duty. A small correlation exists between Education and Time on Active Duty (.20).

Sex tends to be related to Time on Active Duty (-.12). This is a result of a recent influx of women into the service. If women remain in the military, this correlation should decline over time.

There is an important, but small, relationship between Race and Grade (.11). Apparently there is a tendency for blacks to be at lower grade levels. In addition, blacks also appear to have lower educational levels (.10).

It should be noted that with a sample size of this magnitude, very low correlations are statistically significant. In fact, any correlation above .05 is significant at the .001 level. Therefore, it seems more useful to limit discussion to correlations which account for some meaningful proportion of the variance. Subsequent discussion will therefore be generally limited to correlations which exceed .15.

Relationships between Demographic Variables and Attitudes, Perceptions, Behavior, and Knowledge

The relationships between the demographic variables and the attitude, perceptions, behavior, and knowledge scales were examined using correlational analysis. A table of inter-correlations is shown as Table D-6.

Table D-6

Intercorrelations of Demographic Variables and Scale Scores
(N ≈ 4,000)

	Age	Sex	Race	Grade	Education	Time on Active Duty
Factor 1	.10	.01	.71	.18	.13	.12
Factor 2	.20	.07	-.43	.20	.12	.17
Factor 3	.15	-.04	-.28	.10	.02	.12
Factor 4	.24	.01	.20	.28	.16	.22
Behavior Scale	.29	.05	-.06	.27	.11	.29
Knowledge Scale 1	.36	.02	.14	.44	.45	.28
Knowledge Scale 2	.29	.02	.04	.26	.20	.25
Knowledge Scale 3	.27	.64	.13	.36	.39	.20
Knowledge Scale 4	.21	-.01	.03	.36	.39	.15

The scale scores which are listed in Table D-6 are as described in Appendix B. They will be briefly defined here as:

Factor 1 — Perceptions of Discrimination against Blacks. (Higher score represents less perception of discrimination against blacks.)

Factor 2 — Feelings of Reverse Racism. (Higher score represents less feeling that reverse racism exists.)

Factor 3 — Attitudes toward RR/EO Programs. (Higher score represents a more favorable view of the value of RR/EO programs.)

Factor 4 — Perceived Commitment to Equal Opportunity. (Higher score represents perception of strong Army commitment to equal opportunity.)

Behavior Scale	Reports of EO-Related Behaviors. (Higher score represents reports of more frequent *negative* race/EO-related behaviors.)
Knowledge Scale 1	Background Knowledge about Race and EO-Related Issues. (Higher score represents more knowledge.)
Knowledge Scale 2	Knowledge about Army RR/EO Policies. (Higher scores represent more knowledge.)
Knowledge Scale 3	Understanding of RR/EO-Related terms. (Higher scores represent more knowledge.)
Knowledge Scale 4	Knowledge about Cultural and Historical RR/EO Issues. (Higher scores represent more knowledge.)

An examination of Table D-6 shows that there are a number of important relationships between the demographic variables and the criterion scores.

By far the strongest relationship is between Race and Factor 1 (Perception of Discrimination against Blacks), with a correlation of .71. Blacks report a significantly higher level of discrimination against blacks than do whites. The other variable which relates to Factor 1 is Grade (r = .18). Persons in higher grades tend to perceive less discrimination against blacks.

Race is also related to Factor 2 (Feelings of Reverse Racism), with a correlation of –.43. Whites are significantly more likely to report that there is reverse racism. In addition, it can be said that a person is more likely to express a lot of backlash feelings if he is younger (r = .20), lower in grade (r = .20), and has less time on active duty (r = .17).

Race is also related to Factor 3 (Attitudes toward the RR/EO Program), with a correlation of –.28. In this case, whites have a significantly less favorable attitude toward the RR/EO programs than blacks. In addition, it appears that persons with less favorable attitudes toward the RR/EO program are younger (r = .15).

Factor 4 (Perceived Commitment to Equal Opportunity), is also related to several demographic variables. The correlation between race and Factor 4 is .20. This indicates that whites are more likely to think that the Army is committed to equal opportunity. In

addition, older respondents are more likely to perceive a strong commitment (r = .24) as are those in higher grades (r = .28), and those with more time on active duty (r = .22). In addition, it appears that those with more education perceive higher levels of commitment to EO.

Reports of more frequent negative race and EO-related behaviors is related to Age, Grade, and Time on Active Duty. Older personnel are significantly more likely to report such negative behaviors (r = .29) as are those in higher grades (r = .27) and those with more time on active duty (r = .29).

The four knowledge scales appear to be significantly related to Age, Grade, Educational Level, and Time on Active Duty. There was minor variation in the four scales. The correlations between Age and Knowledge Scale 1 ranged from .21 to .36; for Grade, the correlations ranged from .26 to .44. For Education the correlation ranged from .20 to .45 and for Time on Active Duty, from .15 to .28. Clearly, better educated and more senior personnel were more likely to answer the knowledge questions accurately.

Scale Scores by Selected Demographic Variables

Three variables were selected for further analysis. These are Race, Grade and Education level. Race was selected because of its strong correlation with the factor scores. This was also true of Grade. Grade is also a surrogate for Age and Time on Active Duty, all of which are highly correlated. Education is less highly correlated with Grade, but is highly related to the Knowledge scores.

The main effect of race on each of the scales is shown in Tables D-7.

Table D-7

Main Effect of Race

	Blacks			Whites			Others		
	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N
Factor 1	40.4	121.0	1,018	62.6	65.8	2,944	52.1	123.8	319
Factor 2	29.6	20.0	1,018	23.0	34.0	2,944	25.4	23.7	319
Factor 3	17.8	12.8	1,018	14.6	20.2	2,944	16.1	16.6	319
Factor 4	8.7	5.4	1,018	9.8	4.8	2,944	9.1	5.7	319
Behavior Scale	3.3	0.2	1,018	3.2	0.3	2,944	3.2	0.2	319
Knowledge Scale 1	4.7	4.2	940	5.4	5.6	2,721	4.7	5.2	283
Knowledge Scale 2	5.8	3.8	959	6.0	3.2	2,823	5.7	4.0	302
Knowledge Scale 3	3.8	3.4	909	4.3	3.4	2,640	4.0	3.5	274
Knowledge Scale 4	3.3	3.8	928	3.4	4.5	2,466	3.5	4.0	275

As can be seen, there are important differences by race on most of the scales. In particular, blacks are more likely to perceive more discrimination against blacks (Factor 1).[5] Whites, on the other hand, express more feelings of reverse racism (Factor 2). Blacks tend to have a more favorable view of the value of RR/EO programs (Factor 3) and whites express the view that there is a strong Army commitment to equal opportunity (Factor 4).

The black and white differences are slight on the **Behavior Scale**, but blacks tend to report slightly more frequent negative race or EO-related behavior (Behavior Scale).

At the same time, whites tended to score slightly better on the knowledge items (Knowledge Scales 1 to 4).

In addition to differences by Race, there are also Grade differences. This is shown in Tables D-8 and D-9.

[5]No effort is made to present statistical tests for each comparison. Because of the large sample sizes, very small differences tend to be significant. Sufficient information is available in the tables for the reader to calculate simple t-tests.

Table D-8

Effect of Grade for Black Respondents

	E1 - E4			E5 - E9			Officers		
	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N
Factor 1	38.9	107.7	665	43.0	135.0	332	46.3	110.8	21
Factor 2	29.0	18.6	665	30.8	18.7	332	32.9	18.5	21
Factor 3	17.0	12.0	665	19.0	11.2	332	20.5	11.3	21
Factor 4	8.4	4.8	665	9.3	6.0	332	9.5	6.3	21
Behavior Scale	3.2	0.2	665	3.4	0.2	332	3.6	0.2	21
Knowledge Scale 1	4.2	3.3	598	5.4	4.3	321	7.3	4.8	21
Knowledge Scale 2	5.5	4.1	612	6.5	2.8	326	6.7	1.6	21
Knowledge Scale 3	3.3	2.7	578	4.4	3.4	310	6.4	2.0	21
Knowledge Scale 4	3.0	3.1	603	3.4	3.9	205	6.2	5.2	21

Table D-9

Effect of Grade for White Respondents

	E1 - E4			E5 - E9			Officers		
	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N
Factor 1	61.2	64.7	1,697	64.5	63.9	976	64.5	52.7	271
Factor 2	22.1	30.1	1,697	23.2	36.1	976	27.4	25.1	271
Factor 3	14.3	18.3	1,697	14.7	23.1	976	15.9	20.0	271
Factor 4	9.4	4.5	1,697	10.3	4.7	976	11.3	2.9	271
Behavior Scale	3.1	0.2	1,697	3.3	0.3	976	3.6	0.2	271
Knowledge Scale 1	4.7	4.8	1,522	5.8	4.7	930	8.1	2.3	269
Knowledge Scale 2	5.6	3.5	1,588	6.5	2.4	965	7.0	1.4	270
Knowledge Scale 3	3.9	3.1	1,482	4.6	3.2	890	6.0	1.8	268
Knowledge Scale 4	3.0	3.6	1,362	3.4	4.0	840	5.6	5.2	264

As can be seen, the basic patterns by race are the same. (Non-black minorities were not included because of the small sample sizes.) The lower grades tend to be best characterized as:

1. Perceiving more discrimination against blacks (Factor 1).

2. Perceiving more reverse racism (Factor 2).

3. Having a less favorable view of the value of RR/EO programs (Factor 3).

4. Perceiving less commitment by the Army to equal opportunity (Factor 4).

5. Reporting fewer negative race/EO related behaviors (Behavior Scale).

6. For blacks, higher grades scored better on the knowledge items. This pattern was inconsistent for whites, although whites tended to score higher than blacks.

As Table D-10 notes, education level seemed to be unrelated to scores on the attitude and perception items as well as the Behavior Scale. Those with a higher education tended to perceive less discrimination, but this is likely to be an artifact of the higher educational level of whites.

On the Knowledge Scores, however, those with higher education tended to answer more questions of all types more accurately.

Table D-10

Main Effect of Education

	Low Education			High Education		
	$\bar{X}$	S^2	N	$\bar{X}$	S^2	N
Factor 1	55.6	81.6	2,812	58.2	81.3	1,168
Factor 2	24.5	27.0	2,812	24.5	30.8	1,168
Factor 3	15.5	15.9	2,812	15.0	21.9	1,168
Factor 4	9.4	4.5	2,812	9.4	5.3	1,168
Behavior Scale	3.2	.2	2,812	3.2	.2	1,168
Knowledge Scale 1	4.6	4.0	2,536	5.9	4.6	1,109
Knowledge Scale 2	5.7	3.4	2,648	6.2	2.8	1,136
Knowledge Scale 3	3.7	2.9	2,426	4.7	3.0	1,100
Knowledge Scale 4	2.9	3.0	2,324	3.9	4.5	1,052

APPENDIX E

ANALYSIS OF TRAINING EFFECTS

APPENDIX E

ANALYSIS OF TRAINING EFFECTS

One of the important portions of the data analysis was that comparing the units having higher quality programs with those having lower quality programs. In this appendix will be described:

(1) how the higher and lower quality units were identified; and

(2) differences in these two groups on selected factor scores.

Identification of Higher and Lower Quality Units

A number of questions were asked of each respondent about the Racial Awareness Program (RAP) in his company. Each of these questions was evaluated to determine whether the company was above or below the mean for all units on that item. The items were:

Item	Positive Responses	Negative Responses
1. How often are Unit RR/EO Seminars held in your company or work unit?	Once a month. More than once a month. Once every two months.	Once every three months (quarterly). Less than quarterly. Never. Don't know.
2. When are Unit RR/EO Seminars held in your company or work unit?	During prime training time.	During duty hours, but not prime training time. Outside of duty hours (evenings, weekends, etc.).
3. Are the Unit RR/EO Seminars in your company or work unit usually led by:	An officer from the unit chain of command? An NCO from the unit?	Someone else from the unit? An officer from outside the unit? An enlisted person from outside the unit?

Item	Positive Responses	Negative Responses
4. Is attendance at the Unit RR/EO Seminar in your unit:	Required?	Voluntary?
5. How long ago did you last attend a Unit RR/EO Seminar in your unit?	Less than 1 month ago. 1 - 2 months ago.	3 - 6 months ago. 7 - 12 months ago. Longer than 12 months ago. Never attended a Unit RR/EO Seminars in this unit.
6. How big was the group attending that seminar?	Less than 10 people 10 to 15 people 16 to 25 people.	26 - 75 people. Over 75 people.
7. How easy or hard is it for enlisted personnel in Grades E1-E5 to avoid going to Unit RR/EO Seminars in your unit?	Somewhat hard. Very hard.	Very easy to avoid. Somewhat easy to avoid. Neither easy nor hard. Don't know.
8. Was that person who led the sessions a trained Discussion Leader.	Yes.	No. Don't know.
9. In the seminars you have attended, in general, did the Discussion Leaders seem to be comfortable with the subject matter?	Very comfortable.	Somewhat comfortable. Not comfortable.
10. Do you think that enlisted personnel in Grades E1-E5 spoke out honestly at the seminars you attended?	Both white and non-white personnel spoke out honestly.	Only white personnel spoke out honestly. Only non-white personnel spoke out honestly. Neither white nor non-white personnel spoke out honestly.
11. Do you think that enlisted personnel in Grades E6-E9 spoke out honestly at the seminars you attended?	Both white and non-white personnel spoke out honestly.	Only white personnel spoke out honestly. Only non-white personnel spoke out honestly. Neither white nor non-white personnel spoke out honestly.

Item	Positive Responses	Negative Responses
12. Do you think that officer personnel spoke out honestly at the seminars you attended?	Both white and non-white personnel spoke out honestly.	Only white personnel spoke out honestly. Only non-white personnel spoke out honestly. Neither white nor non-white personnel spoke out honstly.
13. In the seminars you have attended, in general, were the presentations clear and easy to understand?	Very clear.	Somewhat clear. Not clear.
14. In general, how interesting was the material covered in seminars you attended?	Very interesting	Somewhat interesting. Not interesting.
15. Have seminars helped you know how you can work to improve race relations in your unit?	A great deal.	Somewhat. Not at all.
16. In your opinion, have Unit RR/EO Seminars helped to improve communication between soldiers of different races in your unit?	A lot.	Somewhat. Not at all.

For each of these items the proportion of personnel in the total sample marking the positive responses was calculated. In addition, the same calculations were made on each item for the 108 companies surveyed. Then, the difference between the company's scores and the total sample scores was calculated and summed across all items. The result is a score for each company which indicated the extent to which that company was above average or below average.

Of 108 companies, the lowest score was -321.2 and the highest was +343.7. Table E-1 shows the distribution of companies. As would be expected using this procedure, the companies are normally distributed about a mean close to zero ($\bar{X} = -1.84$).

Table E-1

Distribution of Companies on Program Quality Scores

Scores	No. of Companies	Percent
- 350 to - 300	1	.93
- 300 to - 250	2	1.85
- 250 to - 200	3	2.78
- 200 to - 150	2	1.85
- 150 to - 100	11	10.19
- 100 to - 50	18	16.67
- 50 to 0	19	17.59
0 to + 50	18	16.67
+ 50 to +100	14	12.96
+100 to +150	9	8.33
+150 to +200	10	9.26
+200 to +250	0	--
+250 to +300	0	--
+300 to +350	1	.93
	108	100.00

These companies are distributed along a continuum which is intended to represent quality of the training program. Since they are measured as "above average" or "below average," it cannot be said that those at the top are "good" and those at the bottom are "bad." All that can be said is that some have "higher quality" programs than others.

In order to evaluate the possible effects of program quality on the attitudes, perceptions, behaviors and knowledge of the unit personnel, the top 20 and bottom 20 units were selected for further study. These results are described in the sections which follow.

Comparison of Higher and Lower Quality Program Companies

A three-way analysis of variance run was made on each of the factor scores (see Appendices B and D for descriptions of these scales), comparing:

Higher *versus* lower quality program units;

Black *versus* white differences;

Lower enlisted *versus* higher enlisted grades;

Interaction effects.

The results of this analysis for Factor 1 (Perception of Discrimination against Blacks), is shown in Table E-2. The important differences are the main effects of program quality ($p < .05$), race ($p < .001$), rank ($p < .001$), and the interaction effects of program quality by race ($p < .05$) and program quality by race by rank ($p < .05$).

Table E-2

Analysis of Variance Results for Factor 1

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Program Quality	363.087	1	363.087	4.569	0.031
Race	138,567.312	1	138,567.312	1,743.814	0.001
Rank	2,433.859	1	2,433.859	30.629	0.001
Program Quality x Race	469.506	1	469.506	5.909	0.015
Program Quality x Rank	288.332	1	288.332	3.629	0.054
Race x Rank	56.287	1	56.287	0.708	0.999
Program Quality x Race x Rank	311.255	1	311.235	3.917	0.045
Residual	104,333.875	1,313	79.462		
TOTAL	247,545.750	1,320	187.535		

The mean differences for the significant effects are shown in Table E-3. (The three-way interaction is not shown because of the difficulties in interpretation.)

Table E-3

Mean Scores for Factor 1

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	57.60	615
Lower Quality Units	55.66	706
Race		
Blacks	39.98	365
Whites	62.89	956
Rank		
E1 - E4	55.48	848
E5 - E9	58.51	473
Interaction Effects		
Higher Quality Units		
Blacks	42.16	166
Whites	63.31	449
Lower Quality Units		
Blacks	38.18	199
Whites	62.52	507

As can be seen from Table E-3, subjects in the higher program quality units perceive less discrimination against blacks. In addition, whites perceive less discrimination as do senior enlisted personnel. It also appears from an examination of the interaction effects that blacks are affected more by the training than whites. That is, the difference in scores from lower to higher quality units for blacks was almost four points. For Whites, the same difference was less than one point.

Table E-4 shows the results of the analysis for Factor 2 (Feelings of Reverse Racism). The important differences are the main effects of program quality ($p < .001$), race ($p < .001$) and rank ($p < .01$). There is an interaction effect between program quality and race ($p < .05$).

Table E-4

Analysis of Variance Results for Factor 2

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Program Quality	636.883	1	636.883	22.978	.001
Race	12,703.586	1	12,703.586	458.324	.001
Rank	285.401	1	285.401	10.297	.002
Program Quality x Race	131.216	1	131.216	4.734	.028
Program Quality x Rank	15.569	1	15.569	.562	.999
Race x Rank	35.382	1	35.382	1.277	.258
Program Quality x Race x Rank	37.271	1	37.271	1.345	.245
Residual	36,393.016	1,313	27.717		
TOTAL	50,392.664	1,320	38.176		

The mean differences are shown in Table E-5. Those who express more backlash feelings include respondents in the lower quality program units, whites, and junior enlisted personnel. It also appears that training had a greater impact on whites than blacks in this area.

Table E-5

Mean Scores for Factor 2

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	25.43	615
Lower Quality Units	23.88	706
Race		
Blacks	29.61	365
Whites	22.69	956
Rank		
E1 - E4	24.12	848
E5 - E9	25.46	473
Interaction Effects		
Higher Quality Units		
Blacks	30.02	166
Whites	23.73	449
Lower Quality Units		
Blacks	29.26	199
Whites	21.77	507

The analysis of Factor 3 (Attitude toward RR/EO Programs) showed significant main effects for program quality ($p < .001$), race ($p < .001$) and rank ($p < .001$). This is shown in Table E-6. The mean scores (Table E-7) indicate that those with more favorable attitudes include those in higher quality program units, blacks and senior enlisted personnel.

Table E-6

Analysis of Variance Results for Factor 3

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Program Quality	192.789	1	192.789	10.705	.001
Race	3,541.112	1	3,541.112	196.621	.001
Rank	194.071	1	194.071	10.776	.001
Program Quality x Race	16.515	1	16.515	.917	.999
Program Quality x Rank	6.644	1	6.644	.369	.999
Race x Rank	62.031	1	62.031	3.444	.060
Program Quality x Race x Rank	.829	1	.829	.046	.999
Rsidual	23,646.902	1,313	18.010		
TOTAL	27,741.172	1,320	21.016		

Table E-7

Mean Scores for Factor 3

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	16.02	615
Lower Quality Units	15.11	706
Race		
Blacks	18.17	365
Whites	14.52	956
Rank		
E1 - E4	15.17	848
E5 - E9	16.18	473

There were also significant main effects for Factor 4 (Perceived Commitment to EO). As Table E-8 shows, there were main effects for program quality ($p < .001$), race ($p < .001$) and rank ($p < .001$). There was a moderate interaction between program quality and rank ($p < .05$). The mean scores are shown in Table E-9. More favorable attitudes existed among those in the higher program quality units, among whites, and among senior enlisted personnel. In addition, it appeared that program quality had a slightly greater effect on those in Grade E1 to E4.

Table E-8

Analysis of Variance Results for Factor 4

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Program Quality	189.862	1	189.862	39.473	.001
Race	239.252	1	239.252	49.741	.001
Rank	192.151	1	192.151	39.949	.001
Program Quality x Race	4.611	1	4.611	.959	.999
Program Quality x Rank	19.252	1	19.252	4.003	.043
Race x Rank	6.616	1	6.616	1.375	.239
Program Quality x Race x Rank	15.160	1	15.160	3.152	.072
Residual	6,315.465	1,313	4.810		
TOTAL	7,088.402	1,320	5.370		

Table E-9

Mean Scores for Factor 4

	Mean	N
Main Effects		
Program Quality		
High Quality Units	9.89	615
Low Quality Units	8.93	706
Race		
Blacks	8.68	365
Whites	9.64	956
Rank		
E1 - E4	9.02	845
E5 - E9	10.01	473
Interaction Effects		
Higher Quality Units		
E1 - E4	9.63	327
E5 - E9	10.00	288
Lower Quality Units		
E1 - E4	8.64	521
E5 - E9	9.75	185

The analysis of the Behavior Scale (Table E-10) indicated that there were main effects for program quality ($p < .001$), race ($p < .05$) and rank ($p < .001$). The mean differences are shown in Table E-11. More frequent negative race/EO-related behaviors were reported by those in higher quality program units, blacks, and senior enlisted personnel.

Table E-10

Analysis of Variance Results for Behavior Scale

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Program Quality	7.464	1	7.464	33.624	.001
Race	1.355	1	1.355	6.105	.013
Rank	11.065	1	11.065	49.851	.001
Program Quality x Race	.205	1	.205	.922	.999
Program Quality x Rank	.057	1	.057	.259	.999
Race x Rank	.506	1	.506	2.279	.127
Program Quality x Race x Rank	.009	1	.009	.041	.999
Residual	291.448	1,313	.222		
TOTAL	316.923	1,320	.240		

Table E-11

Mean Score for Behavior Scale

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	3.34	615
Lower Quality Units	3.14	706
Race		
Blacks	3.28	365
Whites	3.21	956
Rank		
E1 - E4	3.15	848
E5 - E9	3.38	473

Table E-12 shows the results of the analysis of the Knowledge Scale 1 (background knowledge about race and EO-related matters). Significant main effects were found for program quality ($p < .01$), race ($p < .001$) and rank ($p < .001$). As Table E-13 indicates, those scoring higher were those in the higher quality program units, whites and senior enlisted personnel.

Table E-12

Analysis of Variance Results for Knowledge Scale 1

Source of Variation	Mean Squares	df	Mean Square	F	Significance
Program Quality	34.442	1	34.442	8.366	.004
Race	120.728	1	120.728	29.325	.001
Rank	457.347	1	457.347	111.091	.001
Program Quality x Race	.477	1	.477	.116	.999
Program Quality x Rank	5.601	1	5.601	1.360	.242
Race x Rank	.144	1	.144	.035	.999
Program Quality x Race x Rank	.064	1	.064	.016	.999
Residual	4,038.654	981	4.117		
TOTAL	4,747.457	988	4.805		

Table E-13

Mean Scores for Knowledge Scale 1

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	5.43	576
Lower Quality Units	4.76	636
Race		
Blacks	4.67	333
Whites	5.06	536
Rank		
E1 - E4	4.53	762
E5 - E9	6.01	450

For Knowledge Scale 2 (knowledge about Army RR/EO policy), program quality ($p < .01$) and rank ($p < .001$) were significant (Table E-14). As Table E-15 shows, those in the higher quality program units and the senior personnel were more knowledgeable.

Table E-14

Analysis of Variance Results for Knowledge Scale 2

Source of Variations	Sum of Squares	df	Mean Squares	F	Significance
Program Quality	25.587	1	25.587	9.286	.003
Race	.885	1	.885	.321	.999
Rank	149.436	1	149.436	54.232	.001
Program Quality x Race	.525	1	.525	.190	.999
Program Quality x Rank	1.776	1	1.776	.645	.999
Race x Rank	.410	1	.410	.149	.999
Program Quality x Race x Rank	.337	1	.337	.122	.999
Residual	2,703.119	981	2.755		
TOTAL	2,920.571	988	2.956		

Table E-15

Mean Scores for Knowledge Scale 2

	Mean	N
Main Effects		
Program Quality		
Higher Quality Units	6.18	595
Lower Quality Units	5.70	663
Rank		
E1 - E4	5.58	794
E5 - E9	6.52	464

For Knowledge Scale 3 (understanding of RR/EO related terms), there were significant effects of race ($p < .001$) and rank ($p < .001$). This is shown in Table E-16. Whites score higher on this scale as do senior enlisted personnel (Table E-17).

Table E-16

Analysis of Variance Results for Knowledge Scale 3

Source of Variations	Sum of Squares	df	Mean Squares	F	Significance
Program Quality	10.242	1	10.242	3.438	.061
Race	69.897	1	69.897	23.463	.001
Rank	164.849	1	164.849	55.337	.001
Program Quality x Race	.351	1	.351	.118	.999
Program Quality x Rank	1.218	1	1.218	.409	.999
Race x Rank	4.070	1	4.070	1.366	.241
Program Quality x Race x Rank	.331	1	.331	.111	.999
Residual	2,922.428	981	2.979		
TOTAL	3,205.106	988	3.244		

Table E-17

Mean Scores for Knowledge Scale 3

	Mean	N
Main Effects		
Race		
Blacks	3.76	324
Whites	4.24	850
Rank		
E1 - E4	3.74	735
E5 - E9	4.72	439

On Knowledge Scale 4 (knowledge about cultural and historical RR/EO issues), the only significant variable was rank ($p < .001$) with senior personnel scoring higher (Table E-18 and Table E-19).

Table E-18

Analysis of Variance Results for Knowledge Scale 4

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance
Program Quality	4.977	1	4.977	1.231	.267
Race	.173	1	.173	.043	.999
Rank	85.760	1	85.760	21.207	.001
Program Quality x Race	4.594	1	4.594	1.136	.287
Program Quality x Rank	.163	1	.163	.040	.999
Race x Rank	3.460	1	3.460	.856	.999
Program Quality x Race x Rank	.142	1	.142	.035	.999
Residual	3,967.016	981	4.044		
TOTAL	4,064.131	988	4.113		

Table E-19

Mean Scores for Knowledge Scale 4

	Mean	N
Main Effect		
Rank		
E1 - E4	3.08	701
E5 - E9	3.76	421

It is clear from this analysis that program quality is an important variable. The findings suggest that more positive training programs are associated with more positive attitudes and perceptions (Factors 1 to 4). It appeared that training may be associated with more reports of negative behaviors. This suggests training may be sensitizing personnel to the presence of negative race/EO-related behaviors. Training was also associated with higher knowledge levels for Knowledge Scales 1 and 2.

Because of variations in the demographic makeup of the units in the higher and lower quality program units, an analysis of covariance was performed on the scales using race and rank as covariates. Tables E-20 to E-28 show the results. As can be seen, the results noted above remain unchanged, with program quality representing an important variable in relation to attitudes, perceptions, behaviors, and knowledge levels.

Table E-20

Analysis of Covariance of Factor 1

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	68,820.375	1	68,820.375	508.758	.001
Rank	4,104.371	1	4,104.371	30.342	.001
Main Effects					
Program Quality	640.149	1	640.149	4.732	.028
Residual	192,626.187	1,424	135.271		
TOTAL	265,635.750	1,427	186.150		

Table E-21

Analysis of Covariance of Factor 2

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	7,383.371	1	7,383.371	236.449	.001
Rank	557.452	1	557.452	17.852	.001
Main Effects					
Program Quality	618.806	1	618.806	19.817	.001
Residual	44,465.840	1,424	31.226		
TOTAL	53,097.430	1,427	37.209		

Table E-22

Analysis of Covariance of Factor 3

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	2,037.780	1	2,037.780	107.520	.001
Rank	241.462	1	241.462	12.740	.001
Main Effects					
Program Quality	166.617	1	166.617	8.791	.003
Residual	26,988.383	1,424	18.953		
TOTAL	29,458.988	1,427	20.644		

Table E-23

Analysis of Covariance of Factor 4

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	95.159	1	95.159	19.100	.001
Rank	369.154	1	369.154	74.096	.001
Main Effects					
Program Quality	217.792	1	217.792	43.715	
Residual	7,094.520	1,424	4.982		
TOTAL	7,770.331	1,427	5.445		

Table E-24

Analysis of Covariance of the Behavior Scale

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	1.463	1	1.463	6.744	.009
Rank	18.385	1	18.385	84.738	.001
Main Effects					
Program Quality	7.624	1	7.624	35.140	.001
Residual	308.957	1,424	.217		
TOTAL	336.614	1,427	.236		

Table E-25

Analysis of Covariance of Knowledge Scale 1

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	54.979	1	54.979	12.948	.001
Rank	556.139	1	556.139	130.976	.001
Main Effects					
Program Quality	35.685	1	35.685	8.404	.004
Residual	4,513.605	1,063	4.246		
TOTAL	5,154.340	1,066	4.835		

Table E-26

Analysis of Covariance of Knowledge Scale 2

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	0.114	1	0.114	0.045	.999
Rank	210.579	1	210.579	75.449	.001
Main Effects					
Program Quality	29.823	1	29.823	10.685	.001
Residual	2,966.861	1,063	2.791		
TOTAL	3,207.269	1,066	3.009		

Table E-27

Analysis of Covariance of Knowledge Scale 3

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	58.939	1	58.939	19.543	.001
Rank	200.808	1	200.808	66.584	.001
Main Effects					
Program Quality	9.931	1	9.931	3.293	.066
Residual	3,205.842	1,063	3.016		
TOTAL	3,471.704	1,066	3.257		

Table E-28

Analysis of Covariance of Knowledge Scale 4

Source of Variation	Sum of Squares	df	Mean Square	F	Significance
Covariates					
Race	1.256	1	1.256	.314	.999
Rank	78.949	1	78.949	19.727	.001
Main Effects					
Program Quality	3.746	1	3.746	.936	.999
Residual	4,254.316	1,063	4.002		
TOTAL	4,337.937	1,066	4.069		

APPENDIX F

RESULTS OF STATISTICAL TESTS FOR SIGNIFICANCE

Table F-1

Chi-Square Tests for Data Tables in Body of Report

Table	Type of Table	df	Chi-Square	p-Value
1	Race by response	4	1549.37	$p<.001$
2	"	4	83.08	$p<.001$
	"	6	1400.18	$p<.001$
3	"	8	1432.50	$p<.001$
	"	8	708.03	$p<.001$
4	"	8	930.41	$p<.001$
5	"	8	1070.70	$p<.001$
6	"	8	114.13	$p<.001$
7	"	8	96.45	$p<.001$
	"	8	74.64	$p<.001$
8	"	8	20.96	$p<.01$
	"	8	10.86	$p<.25$
9	"	8	34.31	$p<.001$
10	"	8	34.41	$p<.001$
	"	8	57.54	$p<.001$
	"	8	33.26	$p<.001$
11	"	8	55.03	$p<.001$
	"	8	144.07	$p<.001$
	"	8	127.94	$p<.001$
12	"	8	77.46	$p<.001$
13	"	8	293.04	$p<.001$
	"	8	76.18	$p<.001$
14	"	8	175.77	$p<.001$
	"	8	93.04	$p<.001$
15	"	8	34.09	$p<.001$
16	"	8	63.03	$p<.001$
17	"	8	69.11	$p<.001$
18	"	8	32.99	$p<.001$

Table F-1 (Continued)

Table	Type of Table	df	Chi-Square	p-Value
18	Race by correct vs. other response	2	33.16	$p<.001$
	"	2	3.33	$p<.20$
	"	2	3.80	$p<.20$
	"	2	40.19	$p<.001$
	"	2	42.70	$p<.001$
	"	2	0.87	$p<.75$
	"	2	36.98	$p<.001$
	"	2	94.72	$p<.001$
19	Race by response	4	7.44	$p<.20$
	"	4	27.37	$p<.001$
25	"	8	781.55	$p<.001$
26	"	8	71.56	$p<.001$
27	"	8	122.44	$p<.001$
	"	8	101.80	$p<.001$
28	"	8	54.99	$p<.001$
	"	4	125.08	$p<.001$
	"	8	791.83	$p<.001$
30	"	8	9.32	$p<.50$
31	"	6	209.35	$p<.001$
32	"	6	575.65	$p<.001$
33	"	8	395.89	$p<.001$
	"	8	174.96	$p<.001$
34	"	6	171.33	$p<.001$
	"	4	130.16	$p<.001$
	"	4	84.49	$p<.001$
	"	8	126.39	$p<.001$
37	Higher vs. lower blacks by response	2	18.15	$p<.001$
	Higher vs. lower whites by response	2	62.66	$p<.001$
	Higher vs. lower others by response	2	3.78	$p<.20$

Table F-1 (Continued)

Table	Type of Table	df	Chi-Square	p-Value
38	Higher vs. lower blacks by response	2	11.53	$p<.01$
	Higher vs. lower whites by response	2	45.17	$p<.001$
	Higher vs. lower others by response	2	13.02	$p<.01$
39	Higher vs. lower blacks by response	4	15.26	$p<.01$
	Higher vs. lower whites by response	4	34.91	$p<.001$
	Higher vs. lower others by response	4	8.52	$p<.10$
40	Higher vs. lower blacks by response	2	25.04	$p<.001$
	Higher vs. lower whites by response	2	72.51	$p<.001$
	Higher vs. lower others by response	2	11.47	$p<.01$
41	Higher vs. lower blacks by response	4	12.88	$p<.02$
	Higher vs. lower whites by response	4	47.33	$p<.001$
	Higher vs. lower others by response	4	9.79	$p<.05$
41	Higher vs. lower blacks by response	4	14.75	$p<.01$
	Higher vs. lower whites by response	4	58.01	$p<.001$
	Higher vs. lower others by response	4	3.62	$p<.50$
42A	Higher vs. lower blacks by response	2	2.69	$p<.50$
	Higher vs. lower whites by response	2	4.61	$p<.10$
	Higher vs. lower others by response	2	0.05	$p<.975$
42B	Higher vs. lower blacks by response	3	6.40	$p<.10$
	Higher vs. lower whites by response	3	7.92	$p<.05$
	Higher vs. lower others by response	3	4.06	$p<.50$
42C	Higher vs. lower blacks by response	4	7.02	$p<.20$
	Higher vs. lower whites by response	4	3.07	$p<.75$
	Higher vs. lower others by response	4	3.86	$p<.50$
42D	Higher vs. lower blacks by response	4	14.12	$p<.01$
	Higher vs. lower whites by response	4	6.83	$p<.20$
	Higher vs. lower others by response	4	2.81	$p<.75$
42E	Higher vs. lower blacks by response	4	15.45	$p<.01$
	Higher vs. lower whites by response	4	8.08	$p<.10$
	Higher vs. lower others by response	4	2.29	$p<.75$

Table	Type of Table	df	Chi-Square	p-Value
43	Higher vs. lower blacks by response	4	9.75	$p<.05$
	Higher vs. lower whites by response	4	27.38	$p<.001$
	Higher vs. lower others by response	4	1.58	$p<.90$
43	Higher vs. lower blacks by response	4	4.27	$p<.50$
	Higher vs. lower whites by response	4	29.73	$p<.001$
	Higher vs. lower others by response	4	11.13	$p<.05$
43	Higher vs. lower blacks by response	4	2.82	$p<.75$
	Higher vs. lower whites by response	4	21.02	$p<.001$
	Higher vs. lower others by response	4	9.36	$p<.10$
43	Higher vs. lower blacks by response	4	0.79	$p<.95$
	Higher vs. lower whites by response	4	18.06	$p<.01$
	Higher vs. lower others by response	4	13.09	$p<.02$
44	Higher vs. lower blacks by response	4	4.89	$p<.50$
	Higher vs. lower whites by response	4	22.27	$p<.001$
	Higher vs. lower others by response	4	8.44	$p<.10$
44	Higher vs. lower blacks by response	4	13.90	$p<.01$
	Higher vs. lower whites by response	4	22.13	$p<.001$
	Higher vs. lower others by response	4	5.03	$p<.50$
44	Higher vs. lower blacks by response	4	11.96	$p<.02$
	Higher vs. lower whites by response	4	42.26	$p<.001$
	Higher vs. lower others by response	4	12.12	$p<.02$
45	Higher vs. lower blacks by response	4	10.11	$p<.05$
	Higher vs. lower whites by response	4	39.86	$p<.001$
	Higher vs. lower others by response	4	7.00	$p<.20$
45	Higher vs. lower blacks by response	4	15.10	$p<.01$
	Higher vs. lower whites by response	4	18.01	$p<.01$
	Higher vs. lower others by response	4	7.44	$p<.20$
46	Higher vs. lower blacks by response	4	6.55	$p<.20$
	Higher vs. lower whites by response	4	9.76	$p<.05$
	Higher vs. lower others by response	4	6.71	$p<.20$

Table F-1 (Continued)

Table	Type of Table	df	Chi-Square	p-Value
46	Higher vs. lower blacks by response	4	12.81	$p<.02$
	Higher vs. lower whites by response	4	44.70	$p<.001$
	Higher vs. lower others by response	4	5.57	$p<.25$
46	Higher vs. lower blacks by response	4	5.78	$p<.25$
	Higher vs. lower whites by response	4	26.70	$p<.001$
	Higher vs. lower others by response	4	4.34	$p<.50$
47	Higher vs. lower blacks by response	4	20.45	$p<.001$
	Higher vs. lower whites by response	4	55.22	$p<.001$
	Higher vs. lower others by response	4	11.50	$p<.05$
47	Higher vs. lower blacks by response	4	11.02	$p<.05$
	Higher vs. lower whites by response	4	44.37	$p<.001$
	Higher vs. lower others by response	4	12.35	$p<.02$
47	Higher vs. lower blacks by response	4	4.85	$p<.50$
	Higher vs. lower whites by response	4	40.91	$p<.001$
	Higher vs. lower others by response	4	7.52	$p<.20$
48	Higher vs. lower blacks by response	4	4.02	$p<.50$
	Higher vs. lower whites by response	4	30.10	$p<.001$
	Higher vs. lower others by response	4	13.59	$p<.01$
48	Higher vs. lower blacks by response	4	22.17	$p<.001$
	Higher vs. lower whites by response	4	14.17	$p<.01$
	Higher vs. lower others by response	4	8.37	$p<.10$
48	Higher vs. lower blacks by response	4	7.91	$p<.10$
	Higher vs. lower whites by response	4	12.23	$p<.02$
	Higher vs. lower others by response	4	10.85	$p<.05$
48	Higher vs. lower blacks by response	4	16.23	$p<.01$
	Higher vs. lower whites by response	4	26.32	$p<.001$
	Higher vs. lower others by response	4	7.09	$p<.20$
49	Higher vs. lower blacks by correct vs. other response	1	0.91	$p<.50$
	Higher vs. lower whites by correct vs. other response	1	7.72	$p<.01$
	Higher vs. lower others by correct vs. other response	1	0.44	$p<.75$

Table F-1 (Continued)

Table	Type of Table	df	Chi-Square	p-Value
50	Higher vs. lower blacks by correct vs. other response	1	7.43	$p<.01$
	Higher vs. lower whites by correct vs. other response	1	19.22	$p<.001$
	Higher vs. lower others by correct vs. other response	1	3.18	$p<.10$
	Higher vs. lower blacks by correct vs. other response	1	17.95	$p<.001$
	Higher vs. lower whites by correct vs. other response	1	13.33	$p<.001$
	Higher vs. lower others by correct vs. other response	1	0.79	$p<.50$
	Higher vs. lower blacks by correct vs. other response	1	0.45	$p<.50$
	Higher vs. lower whites by correct vs. other response	1	3.52	$p<.10$
	Higher vs. lower others by correct vs. other response	1	1.18	$p<.50$
	Higher vs. lower blacks by correct vs. other response	1	0.00	$p<.95$
	Higher vs. lower whites by correct vs. other response	1	12.45	$p<.001$
	Higher vs. lower others by correct vs. other response	1	0.48	$p<.50$
	Higher vs. lower blacks by correct vs. other response	1	2.30	$p<.20$
	Higher vs. lower whites by correct vs. other response	1	15.97	$p<.001$
	Higher vs. lower others by correct vs. other response	1	6.94	$p<.01$
	Higher vs. lower blacks by correct vs. other response	1	0.00	$p<.95$
	Higher vs. lower whites by correct vs. other response	1	12.58	$p<.001$
	Higher vs. lower others by correct vs. other response	1	7.29	$p<.01$
	Higher vs. lower blacks by correct vs. other response	1	5.44	$p<.02$
	Higher vs. lower whites by correct vs. other response	1	26.54	$p<.001$
	Higher vs. lower others by correct vs. other response	1	0.32	$p<.75$
	Higher vs. lower blacks by correct vs. other response	1	0.27	$p<.75$
	Higher vs. lower whites by correct vs. other response	1	22.41	$p<.001$
	Higher vs. lower others by correct vs. other response	1	1.69	$p<.20$
51A	Higher vs. lower blacks by correct vs. other response	1	3.38	$p<.10$
	Higher vs. lower whites by correct vs. other response	1	8.83	$p<.01$
	Higher vs. lower others by correct vs. other response	1	4.68	$p<.05$

Table F-1 (Continued)

Table	Type of Table	df	Chi-Square	p-Value
51B	Higher vs. lower blacks by correct vs. other response	1	0.70	$p < .50$
	Higher vs. lower whites by correct vs. other response	1	0.05	$p < .90$
	Higher vs. lower others by correct vs. other response	1	0.03	$p < .90$
51C	Higher vs. lower blacks by correct vs. other response	1	0.00	$p < .95$
	Higher vs. lower whites by correct vs. other response	1	0.14	$p < .75$
	Higher vs. lower others by correct vs. other response	1	1.36	$p < .25$
51D	Higher vs. lower blacks by correct vs. other response	1	0.00	$p < .95$
	Higher vs. lower whites by correct vs. other response	1	4.85	$p < .05$
	Higher vs. lower others by correct vs. other response	1	0.03	$p < .90$
51E	Higher vs. lower blacks by correct vs. other response	1	0.39	$p < .75$
	Higher vs. lower whites by correct vs. other response	1	0.13	$p < .75$
	Higher vs. lower others by correct vs. other response	1	1.22	$p < .50$

Table F-2

Z Scores for Differences in Proportions for Table 20[6]

Whites

1972		1972		1976
20%	Z = -1.08, p < .15	23%	Z = 0.00, p < .50	23%
55%	Z = 0.00, p < .50	55%	Z = 3.61, p < .001	48%
25%	Z = 1.12, p < .15	22%	Z = -2.83, p < .001	29%

Blacks

1972		1974		1976
10%	Z = -3.06, p < .01	20%	Z = -0.80, p < .25	23%
50%	Z = -8.62, p < .0001	52%	Z = 2.48, p < .01	45%
39%	Z = 4.41, p < .0001	27%	Z = -1.57, p < .10	32%

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6 $Z = \frac{p_1 - p_2}{\sigma_{p_1 - p_2}}$ where $\sigma_{p_1 - p_2} \sqrt{PQ \left(\frac{1}{n} + \frac{1}{n_2} \right)}$

from Allen L. Edwards, *Experimental Design in Psychological Research* (New York: Holt, Rinehart and Winston, Inc., 1968), 3rd edition, p. 46. The Z-test here is a test for the significance of differences in two proportions making reference to the table of the standard normal distribution. The Z is somewhat equivalent to the standard t, except that as the sample size increases, the standard normal distribution using the Z-test is more appropriate.

Table F-3

Z Scores for Differences in Proportions for Table 21

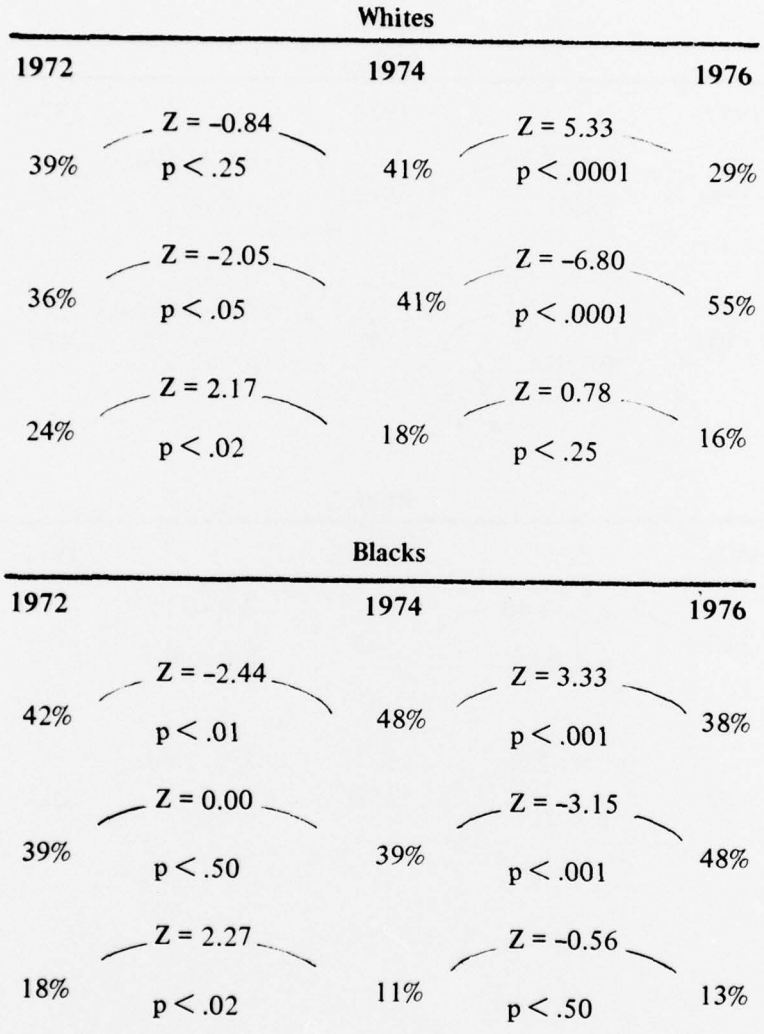

Table F-4

Z Scores for Differences in Proportions for Table 31A